REMARKS

Claims 1-20 are currently pending in the application. Claims 1, 3, 4, 8-11, 15 and 16 are rejected for lack of novelty over Terry, and claims 5-7 and 12-14 are rejected for obviousness over Terry/Kotake. Claims 2 and 17-20 are allowed.

Applicant is appreciative of the indication of allowable subject matter. However, applicant respectfully submits that the rejections of claims 1, 3-16 are incorrect, because nothing in the cited references teaches or suggests the subject matter of the claims.

Consider, for example, claim 1, which recites first and second logic that meet the following requirements:

> "first logic for mapping successive bits of the digital data into successive BPSK symbols using one or more BPSK constellations; and
>
> second logic for providing the one or more BPSK constellations to be applied by the first logic in mapping bits of the digital data into BPSK symbols such that orthogonal BPSK constellations are applied to successive bits of the digital data." (Emphasis added).

The same or similar limitations are recited in claim 8 as follows:

> "mapping a bit of the digital data into a BPSK symbol using a first BPSK constellation; and
>
> mapping a next successive bit of the digital data into a BPSK symbol using a second BPSK constellation orthogonal to the first." (Emphasis added).

The same or similar limitations are present in each of dependent claims 3-7, 9-16 by virtue of their dependency, direct or indirect, on either of claims 1 or 8. Thus, each of the rejected claims requires that successive bits of the incoming digital data be mapped into successive BPSK symbols, with orthogonal BPSK constellations being applied for the mapping of the successive bits.

However, referring to Fig. 1 of Terry, reproduced below, according to that reference, the incoming data is divided into groups of N bits each, with only the most

significant bit of each group being applied to BPSK modulator 24.[1] (*See* Col. 5:25-27 ("The modulator 24 is operable to modulate the most significant bit of each group of symbols generated by the data source.")). The remaining N-1 bits in each group bypass BPSK modulator 24 and are input to the switch 34:

> The other bits, forming the least significant bits of each group of the symbols generated by the data source **18** is passed on the line **28**. The line **28** passes N-1 bits of each group of symbol bits generated by the data source thereon. That is to say, the Nth bit is provided to the BPSK modulator **24** and the remaining ones of the bits are generated on the line **28**. The BPSK modulator together with elements (not separately shown) utilized to segregate the bits into the separate paths, i.e., extending to the BPSK modulator **24** and extending on the line **28**, together form a modulator element **32**.

(*Id.* at Col. 5:31-40).

Thus, Terry does not meet the requirement of claim 1, that "successive bits of the digital data [be mapped] into successive BPSK symbols using one or more BPSK constellations." Instead, in Terry, only the most significant bit in each group of N bits is applied to the BPSK modulator 24. Since the remaining N-1 bits in each group are not applied to the BPSK modulator 24, the claim language is not met.

[1] Terry teaches that N is the dimensionality of a higher order hypercube, *i.e.*, is greater than 1. *See, e.g.*, Col. 2:29-31, 44-48 ("Biorthogonal codes are geometrically represented by the vertices of a hypercube in N dimensions. . . . A manner by which to implement biorthogonal coding in a higher-order modulation scheme, such as one utilizing a N-dimensional spherical code, would advantageously improve communication quality in a communication system.") (Emphasis added).

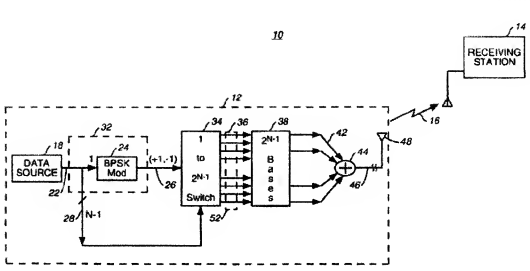

FIG. 1

In addition to this, as Fig. 1 shows, the rotator block 52 in Terry is only applied to the output of switch 34, but not to the BPSK modulator 24. Therefore, the symbol constellation applied by the BPSK modulator 24 is not rotated, but remains the same. Moreover, in an exemplary implementation, the degree of rotation is only 45°, which is not orthogonal. (*See* Col. 6:13-16). Thus, Terry does not meet the requirement of the claims that "orthogonal BPSK constellations [be] applied to successive bits of the digital data." Instead, in Terry, the same BPSK constellation is applied to the most significant bit of each group.

Thus, Terry does not teach these limitations. Moreover, nothing in Terry suggests these limitations. In fact, the following passage of Terry, the base reference, teaches away from these limitations:

> The other bits, forming the least significant bits of each group of the symbols generated by the data source **18** is passed on the line **28**. The line **28** passes N-1 bits of each group of symbol bits generated by the data source thereon. That is to say, the Nth bit is provided to the BPSK modulator **24** and the remaining ones of the bits are generated on the line **28**. The BPSK modulator together with elements (not separately shown) utilized to segregate the bits into the separate paths, i.e., extending to the BPSK modulator **24** and extending on the line **28**, together form a modulator element **32**.

(*Id.* at Col. 5:31-40).

Nothing in Kotake, the other reference cited by the Examiner, teaches or suggests these limitations, or otherwise fills the gaps in teaching of Terry. Moreover, the MPEP indicates it would be improper to rely on a secondary reference, such as Kotake, for a proposed combination that would render the base reference (Terry) "unsatisfactory for its intended purpose." (*See* MPEP §2143.01(V)).

For all the foregoing reasons, claims 1, 3-16 are patentable over Terry and Kotake, considered singly and jointly.

For all the foregoing reasons, the Examiner is earnestly solicited to allow all claims and pass this application to issuance.

Respectfully submitted,

Dated: October 1, 2007

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